

James A. Spina
Vice President

Calvert Cliffs Nuclear Power Plant, Inc.
1650 Calvert Cliffs Parkway
Lusby, Maryland 20657
410.495.5200
410.495-3500 Fax



March 11, 2008

U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit Nos. 1 & 2; Docket Nos. 50-317 & 50-318
Supplement to License Amendment Request: Modify Technical Specification
Definitions

REFERENCE: (a) Letter from Mr. J. A. Spina (CCNPP) to Document Control Desk (NRC),
dated November 8, 2007, License Amendment Request: Modify
Technical Specification Definitions

In Reference (a), Calvert Cliffs Nuclear Power Plant requested an amendment to Renewed Operating License Numbers DPR-53 and DPR-69 to clarify the Technical Specification definitions for Channel Calibration and Channel Functional Test. This proposed amendment incorporated Nuclear Regulatory Commission-approved Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-205-A, "Revision of Channel Calibration, Channel Functional Test, and Related Definitions," Revision 3, dated July 31, 2003.

The Nuclear Regulatory Commission staff requested a copy of the Technical Specification Bases changes that would be made upon implementation of the change to the definitions. Attachment (1) is a copy of the Bases changes provided for information to assist in the review of the license amendment request. These changes conform to the recommended wording in TSTF-205-A for equivalent Technical Specification Bases changes.

A001
NRR

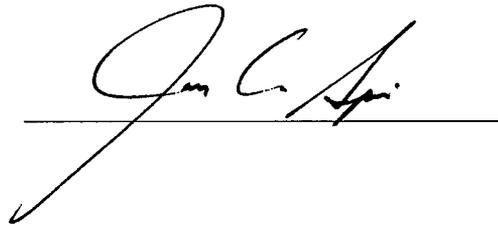
Should you have questions regarding this matter, please contact Mr. Jay S. Gaines at (410) 495-5219.

Very truly yours,



STATE OF MARYLAND :
 : TO WIT:
COUNTY OF CALVERT :

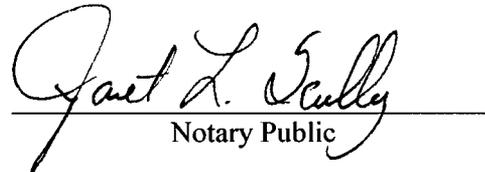
I, James A. Spina, being duly sworn, state that I am Vice President - Calvert Cliffs Nuclear Power Plant, Inc. (CCNPP), and that I am duly authorized to execute and file this License Amendment Request on behalf of CCNPP. To the best of my knowledge and belief, the statements contained in this document are true and correct. To the extent that these statements are not based on my personal knowledge, they are based upon information provided by other CCNPP employees and/or consultants. Such information has been reviewed in accordance with company practice and I believe it to be reliable.



Subscribed and sworn before me, a Notary Public in and for the State of Maryland and County of St. Mary's, this 11th day of March, 2008.



WITNESS my Hand and Notarial Seal:



Notary Public

My Commission Expires:



Date

JAS/EMT/bjd

Attachment: (1) Marked Up Technical Specification Bases (Information Only)

cc: D. V. Pickett, NRC
S. J. Collins, NRC

Resident Inspector, NRC
R. I. McLean, DNR

ATTACHMENT (1)

MARKED UP TECHNICAL SPECIFICATION BASES

(INFORMATION ONLY)

INSERT A

A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specification tests at least once per refueling interval with applicable extensions.

BASES

result in radial or axial power tilts or oscillations. Therefore, individual CEAs are exercised every 92 days to provide increased confidence that all CEAs continue to be trippable, even if they are not regularly tripped. A movement of 7.5 inches is adequate to demonstrate motion without exceeding the alignment limit when only one CEA is being moved. For the purposes of performing the CEA operability test, if the CEA has an inoperable position indicator channel, the alternate indication system (pulse counter or voltage dividing network) will be used to monitor position. The 92-day Frequency takes into consideration other information available to the operator in the Control Room and other SRs being performed more frequently, which add to the determination of OPERABILITY of the CEAs. Between required performances of SR 3.1.4.5, if a CEA(s) is discovered to be immovable, but remains trippable and aligned, the CEA is considered to be OPERABLE. At any time, if a CEA(s) is immovable, a determination of the trippability (OPERABILITY) of the CEA(s) must be made, and appropriate action taken.

SR 3.1.4.5

Performance of a CHANNEL FUNCTIONAL TEST of each reed switch position transmitter channel ensures the channel is OPERABLE and capable of indicating CEA position over the entire length of the CEA's travel. Since this SR must be performed when the reactor is shut down, a 24-month Frequency to be coincident with refueling outages was selected. Operating experience has shown that these components usually pass this SR when performed at a Frequency of once every 24 months. Furthermore, the Frequency takes into account other SRs being performed at shorter Frequencies, which determine the OPERABILITY of the CEA Reed Switch Indication System.

INSERT
A

SR 3.1.4.6

Verification of CEA drop times determined that the maximum CEA drop time permitted is consistent with the assumed drop time used in that safety analysis (Reference 1, Chapter 14). Control element assembly drop time is measured from the time when electrical power is interrupted to the CEDM until the CEA reaches its 90% insertion position, from a fully withdrawn position, with $T_{ave} \geq 515^{\circ}\text{F}$ and all reactor coolant

BASES

bundles and do not represent an integrated reading across the core. Slow changes in neutron flux during the fuel cycle can also be detected at this Frequency.

SR 3.3.1.4

A CHANNEL FUNCTIONAL TEST is performed on each RPS instrument channel, except Loss of Load and Rate of Change of Power, every 92 days to ensure the entire channel will perform its intended function when needed.

Insert
A

In addition to reference voltage power supply tests, the RPS CHANNEL FUNCTIONAL TEST consists of three overlapping tests as described in Reference 1, Section 7.2. These tests verify that the RPS is capable of performing its intended function, from bistable input through the RTCBs. They include:

Bistable Tests

The bistable setpoint must be found to trip within the Allowable Values specified in the LCO and left set consistent with the assumptions of Reference 4. As-found values must also be recorded and reviewed for consistency with the assumptions of the frequency extension analysis. The requirements for this review are outlined in Reference 8.

A test signal is substituted as the input in one instrument channel at a time to verify that the bistable trip unit trips within the specified tolerance around the setpoint. This is done with the affected RPS channel bistable trip unit bypassed. Any setpoint adjustment shall be consistent with the assumptions of Reference 4.

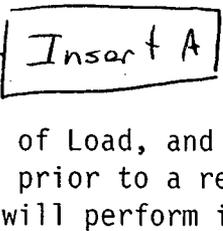
Matrix Logic Tests

Matrix logic tests are addressed in LCO 3.3.3. This test is performed one matrix at a time. It verifies that a coincidence in the two instrument channels for each Function removes power from the matrix relays. During testing, power is applied to the matrix relay test coils and prevents the matrix relay contacts from assuming their de-energized state. This test will detect any short circuits around the bistable contacts in the coincidence logic, such as may be caused by faulty bistable relay or trip bypass contacts.

SR 3.3.1.6

A CHANNEL FUNCTIONAL TEST on the Loss of Load, and Rate of Change of Power channels is performed prior to a reactor startup to ensure the entire channel will perform its intended function if required. The Loss of Load sensor cannot be tested during reactor operation without causing reactor trip. The Power Rate of Change-High trip Function is required during startup operation and is bypassed when shut down or > 12% RTP.

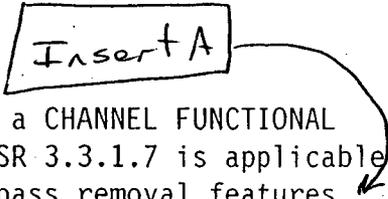
Insert A



SR 3.3.1.7

Surveillance Requirement 3.3.1.7 is a CHANNEL FUNCTIONAL TEST similar to SR 3.3.1.4, except SR 3.3.1.7 is applicable only to Functions with automatic bypass removal features. Proper operation of operating bypasses are critical during plant startup because the bypasses must be in place to allow startup operation and must be removed at the appropriate points during power ascent to enable certain reactor trips. A 24-month SR Frequency is adequate to ensure proper automatic bypass removal feature operation as described in Reference 5. Once the operating bypasses are removed, the bypasses must not fail in such a way that the associated trip Function gets inadvertently bypassed. This feature is verified by the trip Function CHANNEL FUNCTIONAL TEST, SR 3.3.1.4. Therefore, further testing of the automatic bypass removal feature after startup is unnecessary.

Insert A



SR 3.3.1.8

Surveillance Requirement 3.3.1.8 is the performance of a CHANNEL CALIBRATION every 24 months.

CHANNEL CALIBRATION is a check of the instrument channel, including the sensor. The SR verifies that the channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument channel drift between successive calibrations to ensure that the channel remains operational between successive tests. CHANNEL CALIBRATIONS must be performed consistent with Reference 4.

BASES

isolation, indication, and readability. If a channel is outside the criteria, it may be an indication that the transmitter or the signal processing equipment has drifted outside its limits.

The Frequency, once every shift, is based on operating experience that demonstrates the rarity of instrument channel failure. Since the probability of two random failures in redundant channels in any 12-hour period is extremely low, the CHANNEL CHECK minimizes the chance of loss of RPS Function due to failure of redundant channels. The CHANNEL CHECK supplements less formal, but more frequent, checks of the channel during normal operational use of the displays.

SR 3.3.2.2

A CHANNEL FUNCTIONAL TEST on the power rate of change channels is performed once within 7 days prior to each reactor startup to ensure the entire instrument channel will perform its intended function if required. The Rate of Change of Power-High trip Function is required during startup operation and is bypassed when shut down or > 12% RTP. Additionally, operating experience has shown that these components usually pass the SR when performed at a Frequency of once within 7 days prior to each reactor startup.

Only the Allowable Values are specified for each RPS trip Function in the SR. Nominal trip setpoints are established for the Functions via the plant-specific procedures. The nominal setpoints are selected to ensure the plant parameters do not exceed the Allowable Value if the bistable trip unit is performing as required. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable, provided that operation and testing are consistent with the assumptions of the plant-specific setpoint calculations. Each nominal trip setpoint is more conservative than the analytical limit assumed in the safety analysis in order to account for instrument channel uncertainties appropriate to the trip Function. These uncertainties are defined in Reference 3.

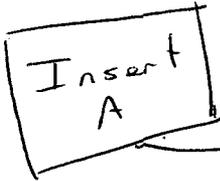
Insert A

BASES

SR 3.3.2.3

Surveillance Requirement 3.3.2.3 is a CHANNEL FUNCTIONAL TEST similar to SR 3.3.2.2, except SR 3.3.2.3 is applicable only to bypass Functions and is performed once every 24 months. ↑

Insert
A



Proper operation of operating bypasses is critical during plant startup because the bypasses must be in place to allow startup operation and must be removed at the appropriate points during power ascent to enable certain reactor trips. A 24-month SR Frequency is adequate to ensure proper automatic bypass removal feature operation as described in Reference 5. Once the operating bypasses are removed, the bypasses must not fail in such a way that the associated trip Function gets inadvertently bypassed. This feature is verified by SR 3.3.2.2. Therefore, further testing of the automatic bypass removal feature after startup is unnecessary.

SR 3.3.2.4

Surveillance Requirement 3.3.2.4 is the performance of a CHANNEL CALIBRATION every 24 months.

CHANNEL CALIBRATION is a check of the instrument channel including the sensor. The SR verifies that the channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift between successive calibrations to ensure that the channel remains operational between successive tests. CHANNEL CALIBRATIONS must be performed consistent with Reference 3.

The as-found and as-left values must also be recorded and reviewed for consistency with the assumptions of the SR interval extension analysis. The requirements for this review are outlined in Reference 4.

The Frequency is based upon the assumption of a 24-month calibration interval in the determination of the magnitude of equipment drift.

BASES

one manual trip, matrix logic, trip path logic, or RTCB channel is inoperable for reasons other than Condition A or D.

If the RTCBs associated with the inoperable channel cannot be opened, the reactor must be shut down within 6 hours and all the RTCBs opened. A Completion Time of 6 hours is reasonable, based on operating experience, to reach the required MODE from full power conditions in an orderly manner, without challenging plant systems, and to open RTCBs. All RTCBs should then be opened, placing the plant in a MODE where the LCO does not apply and ensuring no CEA withdrawal occurs.

SURVEILLANCE
REQUIREMENTS

SR 3.3.3.1

Insert A

A CHANNEL FUNCTIONAL TEST is performed on each RTCB channel every 92 days. This verifies proper operation of each RTCB. The RTCB must then be closed prior to testing the other RTCBs, or a reactor trip may result. The frequency of 92 days is based on the reliability analysis presented in Reference 3. Scheduling SR 3.3.3.1 and SR 3.3.3.2 such that the RTCBs testing is performed at least every 6 weeks meets vendor recommended intervals for cycling of each RTCB in accordance with Reference 3.

SR 3.3.3.2

Insert A

A CHANNEL FUNCTIONAL TEST on each RPS logic channel is performed every 92 days to ensure the entire channel will perform its intended function when needed.

In addition to reference voltage tests, the RPS CHANNEL FUNCTIONAL TEST consists of three overlapping tests as described in Reference 1, Section 7.2. These tests verify that the RPS is capable of performing its intended function, from bistable input through the RTCBs. The first test, the instrument channel test, is addressed by SR 3.3.1.4 in LCO 3.3.1.

This SR addresses the two tests associated with the RPS logic: matrix logic and trip path logic.

BASES

Scheduling SR 3.3.3.1 and SR 3.3.3.2 such that the RTCBs testing is performed at least every 6 weeks meets vendor recommended intervals for cycling of each RTCB in accordance with Reference 3.

Matrix Logic Tests

These tests are performed one matrix at a time. They verify that a coincidence in the two instrument channels for each Function removes power from the matrix relays. During testing, power is applied to the matrix relay test coils and prevents the matrix relay contacts from assuming their de-energized state. The matrix logic tests will detect any short circuits around the bistable contacts in the coincidence logic such as may be caused by faulty bistable relay or trip bypass contacts.

Trip Path Tests

These tests are similar to the matrix logic tests, except that test power is withheld from one matrix relay at a time, allowing the trip path circuit to de-energize, opening the affected set of RTCBs. The RTCBs must then be closed prior to testing the other three trip path circuits, or a reactor trip may result.

The Frequency of 92 days is based on the reliability analysis presented in Reference 4

SR 3.3.3.3

Insert A

A CHANNEL FUNCTIONAL TEST on the manual trip channels is performed prior to a reactor startup to ensure the entire channel will perform its intended function if required. The manual trip Function can be tested either at power or shut down. However, the simplicity of this circuitry and the absence of drift concern makes this Frequency adequate. Additionally, operating experience has shown that these components usually pass the SR when performed once within 7 days prior to each reactor startup.

SR 3.3.4.2

Insert A

A CHANNEL FUNCTIONAL TEST is performed every 92 days to ensure the entire sensor channel will perform its intended function when needed. ↗

The CHANNEL FUNCTIONAL TEST tests the individual sensor channels using an analog or level switch test input to each bistable.

A test signal is substituted for the input in one sensor channel at a time to verify that the bistable trips within the specified tolerance around the setpoint. Any setpoint adjustment shall be consistent with the assumptions of the Reference 5.

SR 3.3.4.3

Insert A

Surveillance Requirement 3.3.4.3 is a CHANNEL FUNCTIONAL TEST similar to SR 3.3.4.2, except 3.3.4.3 is performed every 24 months and is only applicable to automatic block removal features of the sensor block modules. These include the Pressurizer Pressure-Low trip block and the SGIS Steam Generator Pressure-Low trip block. ↗

The CHANNEL FUNCTIONAL TEST for proper operation of the automatic block removal features is critical during plant heatups because the blocks may be in place prior to entering MODE 3, but must be removed at the appropriate points during plant startup to enable the ESFAS Function. A 24-month SR Frequency is adequate to ensure proper automatic block removal module operation as described in Reference 3. Once the blocks are removed, the blocks must not fail in such a way that the associated ESFAS Function is inappropriately blocked. This feature is verified by the appropriate ESFAS Function CHANNEL FUNCTIONAL TEST.

The 24-month SR Frequency is adequate to ensure proper automatic block removal feature operation as described in Reference 3.

BASES

which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours to MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE
REQUIREMENTS

SR 3.3.5.1

A CHANNEL FUNCTIONAL TEST is performed every 92 days to ensure the entire actuation logic channel will perform its intended function when needed. Sensor channel tests are addressed in LCO 3.3.4. This SR addresses actuation logic tests.

Insert A



Actuation Logic Tests

Actuation logic channel testing includes injecting one actuation signal into each two-out-of-four logic actuation modules in each ESFAS Function, and using a bistable trip input to satisfy the actuation logic. Testing includes block logic modules.

Note 1 requires that actuation logic tests include operation of actuation relays. Note 2 allows deferred at power testing of certain subchannel relays to allow for the fact that operating certain relays during power operation could cause plant transients or equipment damage. Those subchannel relays that cannot be tested at power must be tested in accordance with Note 2. These include SIAS No. 5, SIAS No. 10, CIS No. 5, SGIS No. 1, and CSAS No. 3.

These subchannel relays actuate the following components, which cannot be tested at power:

- RCP seal bleedoff isolation valves;
- Service water isolation valves;
- Volume control tank discharge valves;
- Letdown stop valves;
- Component Cooling to and from the RCPs;
- MSIVs and feedwater isolation valves;

BASES

- Instrument air CIVs;
- Heater drain pumps;
- Main feedwater pumps; and
- Condensate booster pumps.

The reasons each of the above cannot be fully tested at power are stated in Reference 1.

Actuation logic tests verify that the ESFAS is capable of performing its intended function, from bistable input through the actuated components.

The Frequency of 92 days is based on operating experience that has shown these components usually pass the surveillance test when performed at this Frequency.

SR 3.3.5.2

A CHANNEL FUNCTIONAL TEST is performed on the manual ESFAS actuation circuitry, de-energizing relays and providing manual actuation of the Function.

This surveillance test verifies that the actuation push buttons are capable of opening contacts in the actuation logic as designed, de-energizing the actuation relays and providing manual trip of the Function. The 24-month Frequency is based on the need to perform this surveillance test under the conditions that apply during a plant outage, and the potential for an unplanned transient if the test were to be performed with the reactor at power. Operating experience has shown these components usually pass the surveillance test when performed at a Frequency of once every 24 months.

REFERENCES

1. UFSAR, Section 7.3, "Engineered Safety Features Actuation Systems"
2. Letter from Mr. R. E. Denton (BGE) to NRC Document Control Desk, dated June 5, 1995, "Response to NRC Request for Review & Comment on Review of Preliminary Accident Precursor Analysis of Trip; Loss of 13.8 kV Bus; Short-Term Saltwater Cooling System Unavailability, CCNPP Unit 2"

BASES

degraded condition in an orderly manner and takes into account the low probability of an event requiring LOVS occurring during this interval.

D.1

Condition D applies if the Required Actions and associated Completion Times are not met.

Required Action D.1 ensures that Required Actions for the affected DG inoperabilities are initiated. The actions specified in LCO 3.8.1 are required immediately.

SURVEILLANCE
REQUIREMENTS

The following SRs apply to each DG-LOVS Function.

SR 3.3.6.1

A CHANNEL FUNCTIONAL TEST is performed every 92 days to ensure that the entire sensor channel will perform its intended function when needed.

Insert A

The Frequency of 92 days is based on plant operating experience with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one sensor channel of a given function in any 92 day Frequency is a rare event. Any setting adjustment shall be consistent with the assumptions of the current plant specific setting analysis.

SR 3.3.6.2

Surveillance Requirement 3.3.6.2 is the performance of a CHANNEL CALIBRATION every 24 months. The CHANNEL CALIBRATION verifies the accuracy of each component within the sensor channel, except stepdown transformers, which are not calibrated. This includes calibration of the undervoltage relays and demonstrates that the equipment falls within the specified operating characteristics defined by the manufacturer.

The SR verifies that the sensor channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift between successive calibrations to ensure that the channel remains operational between

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.3.7.1

Performance of the CHANNEL CHECK once every 12 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one sensor channel to a similar parameter on other channels. It is based on the assumption that sensor channels monitoring the same parameter should read approximately the same value.

Significant deviations between the two sensor channels could be an indication of excessive sensor channel drift in one of the channels or of something more serious. CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant staff, based on a qualitative assessment of the sensor channel that considers sensor channel uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the transmitter or the signal processing equipment has drifted outside its limits.

The Frequency, about once every shift, is based on operating experience that demonstrates the rarity of sensor channel failure. Since the probability of two random failures in redundant channels in any 12-hour period is low, the CHANNEL CHECK minimizes the chance of loss of protective function due to failure of redundant channels. The CHANNEL CHECK supplements less formal, but more frequent, checks of the channel during normal operational use of the displays.

SR 3.3.7.2

Proper operation of the actuation relays is verified by verification of the relay driver output signal.

Insert A

The Frequency of 92 days is based on plant operating experience with regard to actuation channel OPERABILITY, which demonstrates that failure of more than one channel of a given Function in any 92-day interval is a rare event.

SR 3.3.7.3

A CHANNEL FUNCTIONAL TEST is performed on each containment radiation sensor channel to ensure the entire channel, except for sensor and initiating relays, will perform its intended function. ↗

Insert A

The Frequency of 92 days is based on plant operating experience with regard to sensor channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given Function in any 92-day interval is a rare event.

SR 3.3.7.4

CHANNEL CALIBRATION is a check of the sensor channel including the sensor. The Surveillance verifies that the channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for sensor channel drift between successive calibrations to ensure that the channel remains operational between successive tests. CHANNEL CALIBRATIONS must be performed consistent with Reference 2.

The Frequency is based upon the assumption of a 24-month calibration interval based on the refueling interval and the instruments not being inservice during power operations, but part of preparation for being placed in service is a CHANNEL CALIBRATION.

SR 3.3.7.5

Every 24 months, a CHANNEL FUNCTIONAL TEST is performed on the manual CRS actuation circuitry. ↗

Insert A

This surveillance test verifies that the actuation push buttons are capable of opening contacts in the actuation logic as designed, de-energizing the actuation relays and providing manual actuation of the Function. The 24-month Frequency is based on the need to perform this SR under the conditions that apply during a plant outage and the potential for an unplanned transient if the SR were performed with the reactor at power. Operating experience has shown these components usually pass the surveillance test when performed at a Frequency of once every 24 months.

BASES

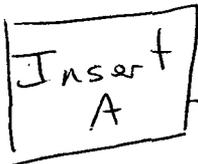
transmitter or the signal processing equipment has drifted outside its limit.

The Frequency, about once every shift, is based on operating experience that demonstrates the rarity of channel failure. The CHANNEL CHECK supplements less formal, but more frequent, checks of channel OPERABILITY during normal operational use of the displays associated with the LCO required channels. In addition, a down-scale alarm and up-scale alarm immediately alert operations to loss of the channel.

SR 3.3.8.2

A CHANNEL FUNCTIONAL TEST is performed on the control room radiation monitoring channel to ensure the entire channel will perform its intended function. ↗

Insert
A



The Frequency of 92 days is based on plant operating experience with regard to channel OPERABILITY and drift.

SR 3.3.8.3

CHANNEL CALIBRATION is a check of the CRRS channel, including the sensor. The surveillance test verifies that the channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for channel drift between successive calibrations to ensure that the channel remains operational between successive surveillance tests. CHANNEL CALIBRATIONS must be performed consistent with Reference 2.

The Frequency of 24 months has been shown by operating experience to be adequate to detect any failures.

REFERENCES

1. UFSAR
 2. CCNPP Setpoint File
-

BASES

will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the plant staff, based on a qualitative assessment of the sensor channel that considers sensor channel uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the transmitter or the signal processing equipment has drifted outside its limit.

The Frequency, about once every shift, is based on operating experience that demonstrates the rarity of channel failure. Since the probability of two random failures in redundant channels in any 12-hour period is low, the CHANNEL CHECK minimizes the chance of loss of protective function due to failure of redundant channels. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays.

SR 3.3.9.2

A CHANNEL FUNCTIONAL TEST is performed on each sensor channel to ensure the entire channel, except for sensor and initiation logic, will perform its intended function. ↗

Insert
A

The Frequency of 92 days is based on plant operating experience with regard to channel OPERABILITY and drift, which demonstrates that failure of more than one channel of a given Function in any 92-day interval is a rare event.

Note 1 indicates proper operation of the individual actuation relays is verified by verification of proper relay driver output signal. Note 2 indicates that relays that cannot be tested at power are excepted from the SR while at power. These relays must, however, be tested once per 24 months.

SR 3.3.9.3

CHANNEL CALIBRATION is a check of the sensor channel including the sensor. The surveillance test verifies that the channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves

BASES

SR 3.3.12.2

Insert A A CHANNEL FUNCTIONAL TEST is performed once within 7 days prior to each reactor startup. This SR ensures that the entire channel is capable of properly indicating neutron flux. Internal test circuitry is used to feed pre-adjusted test signals into the preamplifier to verify channel alignment. It is not necessary to test the detector, because generating a meaningful test signal is difficult; the detectors are of simple construction, and any failures in the detectors will be apparent as change in channel output. This Frequency is the same as that employed for the same channels in the other applicable MODEs.

SR 3.3.12.3

Surveillance Requirement 3.3.12.3 is the performance of a CHANNEL CALIBRATION. A CHANNEL CALIBRATION is performed every 24 months. The surveillance test is a complete check and readjustment of the wide range logarithmic neutron flux monitor channel from the preamplifier input through to the remote indicators. The surveillance test verifies that the channel responds to a measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drift between successive calibrations to ensure that the channel remains operational between successive surveillance tests. CHANNEL CALIBRATIONS must be performed consistent with the plant-specific setpoint analysis.

This SR is modified by a Note to indicate that it is not necessary to test the detector because generating a meaningful test signal is difficult; the detectors are of simple construction, and any failures in the detectors will be apparent as change in channel output. This Frequency is the same as that employed for the same channels in the other applicable MODEs.

REFERENCES

None

BASES

SR 3.4.12.4

The PORV block valve must be verified open every 72 hours to provide the flow path for each required PORV to perform its function when actuated. The valve can be remotely verified open in the main Control Room.

The block valve is a remotely controlled MOV. The power to the valve motor operator is not required to be removed, and the manual actuator is not required locked in the inactive position. Thus, the block valve can be closed in the event the PORV develops excessive leakage or does not close (sticks open) after relieving an overpressure event.

The 72 hour Frequency considers operating experience with accidental movement of valves having remote control and position indication capabilities available where easily monitored. These considerations include the administrative controls over main Control Room access and equipment control.

SR 3.4.12.5

Performance of a CHANNEL FUNCTIONAL TEST is required every 31 days to verify and, as necessary, adjust the PORV open setpoints. The CHANNEL FUNCTIONAL TEST will verify on a monthly basis that the PORV lift setpoints are within the LCO limit. Power-operated relief valve actuation could depressurize the RCS and is not required. The 31 day Frequency considers experience with equipment reliability.

Insert
A

A Note has been added indicating this SR is required to be performed 12 hours after decreasing RCS cold leg temperature to $\leq 365^{\circ}\text{F}$ (Unit 1), $\leq 301^{\circ}\text{F}$ (Unit 2). The test cannot be performed until the RCS is in the LTOP MODEs when the PORV lift setpoint can be reduced to the LTOP setting. The test must be performed within 12 hours after entering the LTOP MODEs.

SR 3.4.12.6

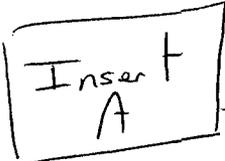
Performance of a CHANNEL CALIBRATION on each required PORV actuation channel is required every 24 months to adjust the whole channel so that it responds and the valve opens within the required LTOP range and with accuracy to known input.

BASES

SR 3.4.14.2

Surveillance Requirement 3.4.14.2 requires the performance of a CHANNEL FUNCTIONAL TEST of the required containment atmosphere radioactivity monitors. The test ensures that the monitor can perform its function in the desired manner. The test verifies the alarm setpoint and relative accuracy of the instrument string. The Frequency of 31 days considers instrument reliability, and operating experience has shown it proper for detecting degradation.

Insert
A



SR 3.4.14.3 and SR 3.4.14.4

These SRs require the performance of a CHANNEL CALIBRATION for each of the RCS leakage detection instrumentation channels. The calibration verifies the accuracy of the instrument string, including the instruments located inside Containment Structure. The Frequency of 24 months is a typical refueling cycle and considers channel reliability. Operating experience has shown this Frequency is acceptable.

REFERENCES

1. UFSAR
 2. Regulatory Guide 1.45, Reactor Coolant Pressure Boundary Leakage Detection Systems, May 1973
-
-

BASES

degradation and verify operation is within the LCO limits. Plant operations are conducted slowly during the performance of PHYSICS TESTS, and monitoring the power level once per hour is sufficient to ensure that the power level does not exceed the limit.

SR 3.4.16.2

Within 12 hours of initiating startup or PHYSICS TESTS, a CHANNEL FUNCTIONAL TEST must be performed on each logarithmic power level neutron flux monitoring channel to verify OPERABILITY and adjust setpoints to proper values. This will ensure that the RPS is properly aligned to provide the required degree of core protection during startup or the performance of the PHYSICS TESTS. The interval is adequate to ensure that the appropriate equipment is OPERABLE prior to the tests to aid the monitoring and protection of the plant during these tests.

Insert
A

REFERENCES

1. 10 CFR Part 50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants, Section XI
-